PATENT SPECIFICATION

Convention Date (United States): Nov. 3, 1928. **341,968**

Application Date (in United Kingdom): Oct. 25, 1929. No. 32,510/29.

Complete Accepted: Jan. 26, 1931.

COMPLETE SPECIFICATION.

Illuminated Sign.

I, FRANCIS HARRY SCANTLEBURY, a citizen of the United States of America, of 1306, Nostrand Avenue, Brooklyn, New York, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to illuminated signs of the type comprising one or more sheets of glass bearing a design or configuration which has been etched into the surface of the glass and which is illuminated by the internal reflection of light entering the plate or plates at the end or edge thereof.

Prior to my invention it was proposed to construct illuminated signs of two juxtaposed sheets of glass each bearing separate and distinct parts of etched matter to be exhibited, these parts being made to appear in different colours by means of different coloured transparent strips interposed between the light source and the edges of the glass sheets.

The object of my invention is to provide an illuminated sign of the above type wherein varying depths of colour and shade effects are exhibited as desired in any portion of the design. Another object is to provide a composite configuration or pictorial design or representation of an object wherein the different component elements or portions of the composite design are exhibited in different colours. A further purpose is to provide a sign structure in which the illuminated signs are in the form of interchangeable units or packs, thereby permitting the subjects to be readily changed.

With these objects in view the present invention consists in an illuminated sign of the above type in which one or more of the plates have portions of the design elements incised to varying depths to thereby refract with different degrees of intensity the light rays transmitted edgewise through the plates.

Reference will now be made to the accompanying drawings which illustrate several embodiments of my invention and in which:—

[*Pr*

Figure 1 is a perspective view of an illuminated sign embodying my invention;

Figure 2 is a top plan view of the same;

Figure 3 is a detailed view showing the separate plates, partly fragmentary, which are assembled in the sign unit or pack to form the complete design;

Figure 4 is a fragmentary view showing a portion of the opaque backing plate;

Figures 5, 6 and 7 are respectively fragments of the corners of the glass plates showing the edges exposed to the rays of the lamp;

Figure 8 is a vertical section through the opaque backing plate;

Figures 9, 10 and 11 are respectively sectional views on the lines 9—9, 10—10 and 11—11 of Fig. 3;

Figure 12 is a perspective view of a fragment of the plate 3*a*;

Figure 13 is an end elevation, mostly in section of one form of my invention having the lamp above the sign plates;

Figure 14 is a vertical sectional view of another form of my invention in which the lamp is below the plates;

Figure 15 is a perspective view of the frame portion of a sign unit or pack;

Figure 16 is a fragmentary vertical sectional view of one end of a pack; and

Figure 17 is a fragmentary, vertical, longitudinal sectional view of the lower portion of the illuminated sign shown in Fig. 14.

In Figs. 1 to 7, I have illustrated one embodiment of my invention as applied to a multi-color sign embodying a pictorial design having the light source, indicated by the incandescent lamps 2, enclosed in the housing or lighting chamber 3, below the glass sign plates or sheets. The rectangular hollow frame 5, which holds the sign plates is preferably made of sheet metal integral with the lighting chamber, which in this form also constitutes the base or support.

I prefer to assemble the plates of the sign by inserting them in the proper relation into a skeleton frame 6, open at the top and bottom with closed sides, as illus-

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trated in Fig. 15. The plates are supported upon inwardly directed flanges 7 at the bottom of the side members. After the plates have been inserted, they are locked by bending the tabs 8, projecting from the upper edges of the frame, down against the plates as indicated in Fig. 16, thereby forming a sign pack which may be inserted as a unit into any suitable sign frame 5. The skeleton frame 6 is preferably provided with offsets 10 at the upper corners which engage the upper edges of the casing frame to support the sign pack. It is important to prevent the passage of any light rays between the casing 5 and the skeleton frame 6 since this would interfere with the bold relief and brilliancy of the sign characters. For this purpose the upper and lower casing members are provided upon the inner side with longitudinal grooves 12 and 13 to receive corresponding beads 14 and 15, stamped in the skeleton sign frame. These interfitting parts also serve to securely hold the sign pack in the casing.

The electric lamps are supported within the lighting chamber by means of suitable brackets 19, carried by a detachable member 20 which may be removed by loosening the screw 21 and swinging the member downwardly until the lugs 23 may be disengaged as indicated in Fig. 17. When it is desired to suspend the sign from the top, the lighting chamber is placed above the plates as shown in Fig. 13.

As pointed out above it has heretofore been proposed to provide illuminated signs wherein different objects or separate and distinct features of the sign were placed upon different sheets and lighted in different colors. Prior to my invention, however, no signs have been produced having component elements or parts of a single figure, displayed in a plurality of colors to produce a pictorial effect; nor have any prior illuminated signs been provided which produce shadow effects and varying depths of color or tone.

For the purpose of explaining my invention I have illustrated in Fig. 1 a pictorial design embodying an old woman in Dutch attire carrying a club in her upraised hand, different parts of this figure being shown in blue, red and white colors respectively.

The dress is exhibited in blue, the folds or plaits of the skirt contrasting strongly with the parts in shadow. In order to produce this effect the dress portion is cut or etched, preferably with a sand-blast, in the glass plate 3*a* in the manner shown at the top of Fig. 3. I regard sand-blasting as one method of etching and have so used the term "etching" in the description and claims. Those portions which are to produce the high lights of the figure and be more strongly illuminated, are first cut or etched by sand-blasting to a certain depth, while the remaining portions are protected by a shielding medium. The protecting covering is then removed from the previously shielded portions and the whole figure of the dress is subjected to the sand-blast until the parts which are to receive less illumination are cut to the desired depth. During this second step the portions previously etched will be cut still deeper. The first cutting will be so gauged or regulated that the combined effect of the two applications of the sand-blast will produce the proper contrasting effect between the high and low lights of the design. This appears more clearly in the enlarged fragmentary view shown in Fig. 12. I may also produce still further gradations in color and shading effects when it is necessary to produce desired effects. Thus in the second cutting, certain portions of the design may remain shielded and these parts may be subjected to an initial cutting while the first and second cuttings are subjected to a further cutting operation The effects produced in this manner by a plurality of cutting or etching operations are surpassingly beautiful and are entirely new in the art of illuminated signs.

The woman's stockings and the club which are to appear in red are etched or cut in sheet 3*b*; while those parts which are to appear in white or uncolored are etched in plate 3*c*, that is, the woman's bonnet, arm, apron and shoes.

The particular color of the light rays which traverse any plate are determined by a thin transparent film embodying the desired color and applied directly to the edge of the plate. Various media may be employed for this purpose, such as the transparent shellac known as "lamp lacquer" used in coloring electric lamps. The coloring may be applied as a glaze which is fired on the edge of the plate. I have indicated in Fig. 5 that a blue lacquer is applied to the lower edge of the plate 3*a* and have indicated in Fig. 6, a red lacquer applied to the lower edge of plate 3*b*. No coloring is applied to the edge of the outer plate 3*c* as the elements of the design on this plate are to appear in white or frosted.

Another feature of my invention resides in the production of a multi-color design, picture or configuration in which the elements are so correlated that the illusion of solidarity and unity is unmarred. To accomplish this result the element or elements on one plate must be etched in

harmony and conformity to the juxtaposed elements upon the other plates. Each element on one plate must, therefore, be located and positioned with relation to the elements on the other plates so that the composite picture, design or configuration presented by the assembled plates will be unitary and unbroken. The outlines of the elements of the pictorial design are counterparts of each other along contiguous edges and make edge to edge contact in the picture or design. These contiguous parts may in some cases overlap to an inconsiderable extent or may even be separated to a slight extent.

A further feature of this phase of my invention consists in positioning the respective elements of the design in a manner to produce the effect of naturalness and solidarity. This gives an aesthetic quality to the picture which is not only pleasing but greatly enhances the artistic beauty of the ensemble. Thus in the example shown, the woman's dress is etched upon the rearmost plate, while the apron which overlies the dress is etched in the front plate. Likewise the arm and shoes are carried by the front plate while the stockings and club are placed on the intermediate plate which is back of the front plate.

It will also be noted that I am enabled to produce the effect of solidity and to a certain extent of thickness and rotundity by the fact that the different portions of the picture or design which are superposed, are supported in parallel planes.

The optical principles involved in the production of edge illuminated etched plates are well known and need not be described. I have taken advantage of the optical laws or phenomena, however, in a manner which is new in this art. By etching certain portions deeper into the plate I have produced new effects. The more deeply cut areas intercept a larger amount of the transmitted light rays and also greatly increase the number of facets and irregularities in the frosted surface which refract and reflect the light outwardly. In this manner I am enabled to produce high lights and shadows, varying degrees of color intensity and tone effects heretofore unknown. The intensity of the internally transmitted light is enhanced by the polished edges of the plates which reflect the light rays back into the plate and I may increase the intensity of this reflection by silvering the edges.

It is important that no light shall penetrate the sign plates from the rear and hence I provide an opaque backing plate 25. This also absorbs any extraneous light from without the sign and causes the design or characters of the sign to stand out in bold relief.

It is obvious that I may mount the plates of different signs upon opposite sides of the opaque plate thus providing a double sign lighted from the same source.

I have discovered that the opaque backing sheet may be employed to establish a ground color to bring out contrasts and color effects in association or combination with the various colors transmitted from the edge lighting. Moreover, since the various colored light rays transmitted through the respective plates do not penetrate each other, I have found that different effects and different degrees in contrasts may be produced by varying the color of the background as by overlaying a solid background of any given color in part with another color.

In Figs. 8 to 11 I have vertical sectional views of the several plates of the sign described herein. When these plates are assembled within the skeleton frame shown in Fig. 15 and secured by bending down the end tabs 8, a sign pack is formed which can be transported as a unit and inserted into one of the sign casings or housings shown in Fig. 1 and in vertical section in Fig. 14. The design or subject matter of the sign can be readily changed by removing one sign pack and inserting another. Thus a commercial concern having branches or stores widely distributed throughout the country may change their signs from time to time by merely shipping new sign packs to be substituted for the old ones. While of course the individual plates could be inserted in the sign housing or casing, the convenience and safety of the packs or sign units will be appreciated.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An illuminated sign of the type set forth in which one or more of the plates have portions of the design elements incised to varying depths to thereby refract with different degrees of intensity the light rays transmitted edgewise through the plates.

2. An illuminated sign as claimed in claim 1 comprising a plurality of juxtaposed glass plates each plate having etched therein a component element of a composite configuration which elements are adapted when the plates are assembled together to form a composite figure or pictorial design and in which the con-

tiguous edges of one or more of said plates have an adherent transparent coloured coating.

3. An illuminated sign as claimed in claim 2 in which an opaque backing plate is positioned against the rear plate to establish a ground colour for the illuminated configuration.

4. An illuminated sign as claimed in claim 2 in which the outlines of the adjacent elements of the design are counterparts of each other along contiguous edges and make edge to edge contact in the design.

5. An illuminated sign as claimed in claim 2 in which the edges of the plates other than the light transmitting edge have inwardly directed mirrored surfaces to thereby reflect the light rays transmitted edgewise through the plates.

6. An illuminated sign as claimed in claim 1 in which a plurality of juxtaposed plates are secured together with the component elements of the composite configuration in proper registry, and mounted in a housing or frame having a lighting chamber extending longitudinally of and adjacent to the contiguous edges of the plates.

7. An illuminated sign as claimed in claim 6 in which means are provided for excluding the passage of extraneous light between a frame for securing the plates together and the housing.

8. An illuminated sign substantially as described and as illustrated in and by the accompanying drawings.

Dated this 25th day of October, 1929.

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Fig. 1.

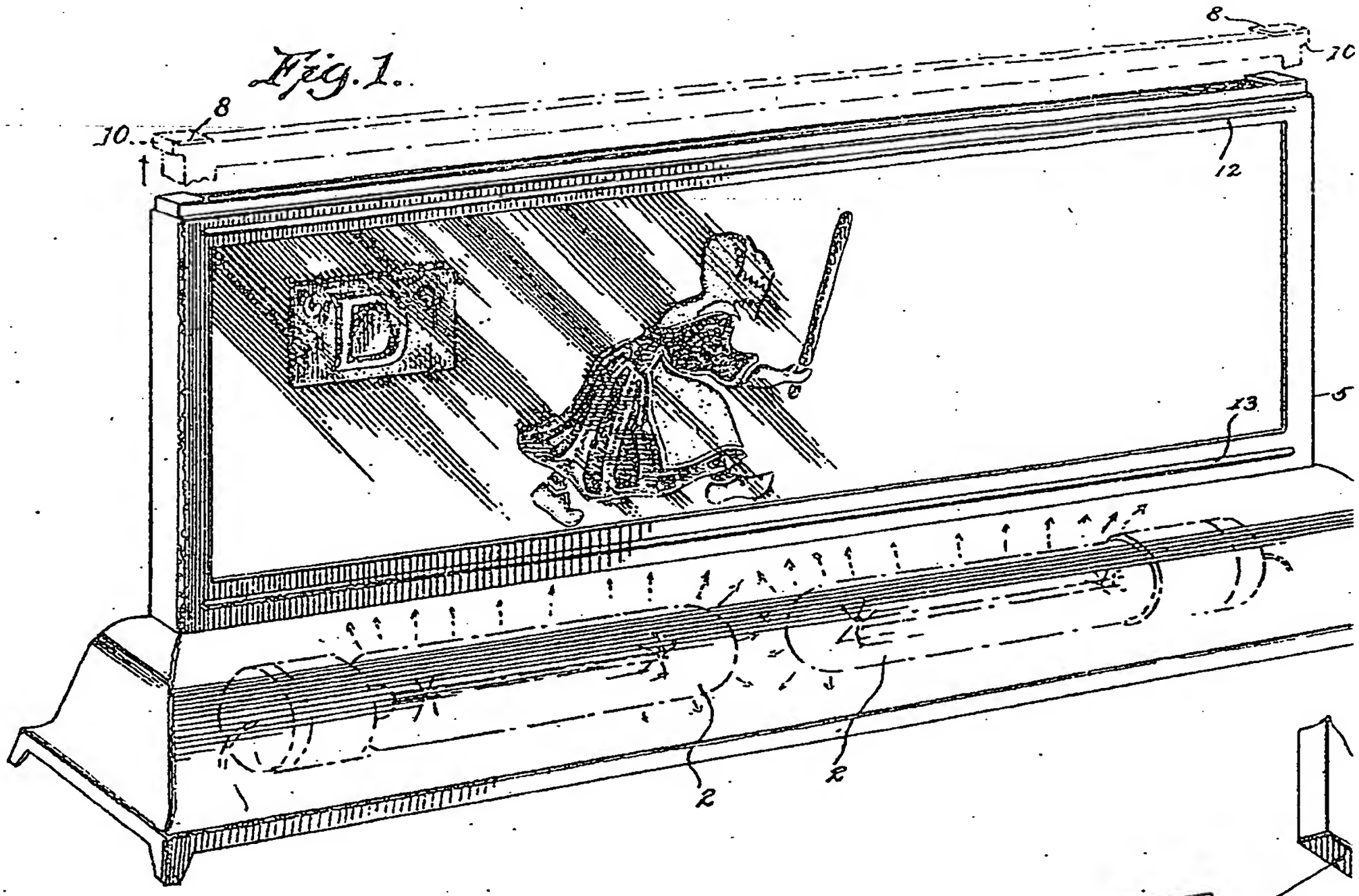

Fig. 2.

Fig. 7

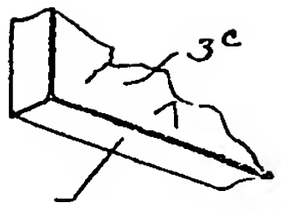

Fig.

Fig. 4.

3 SHEETS
SHEET 1

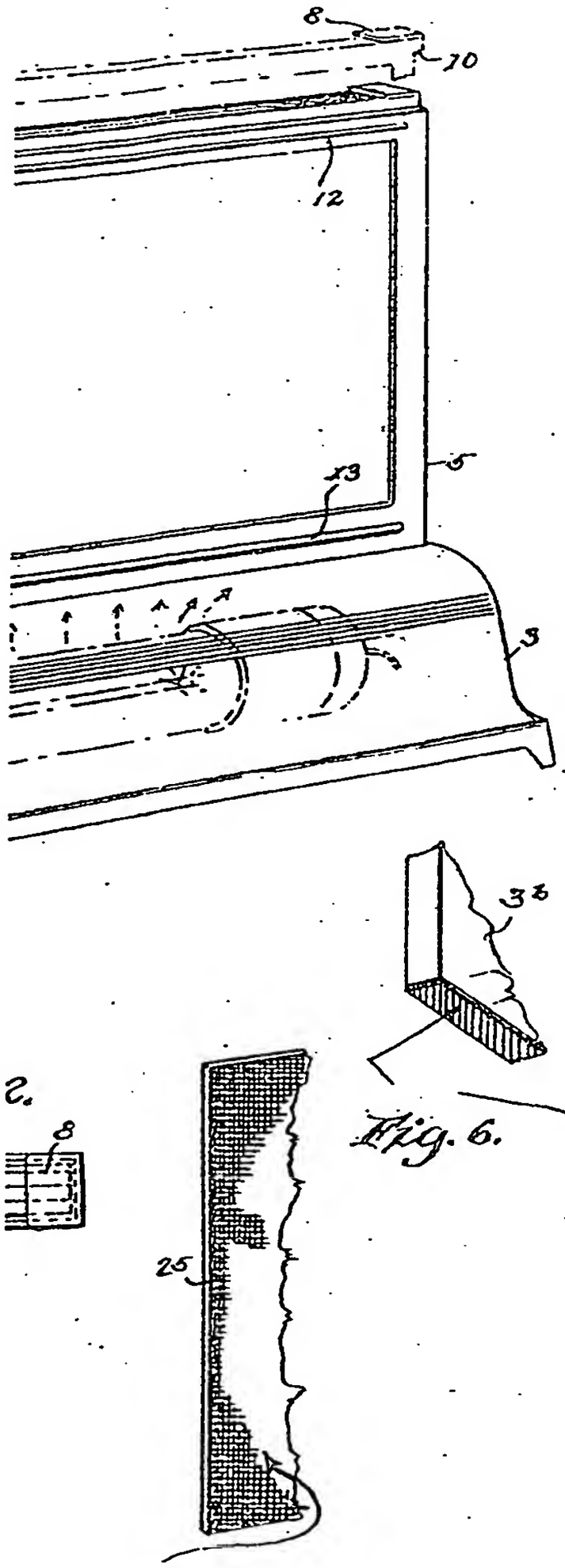

Fig. 6.

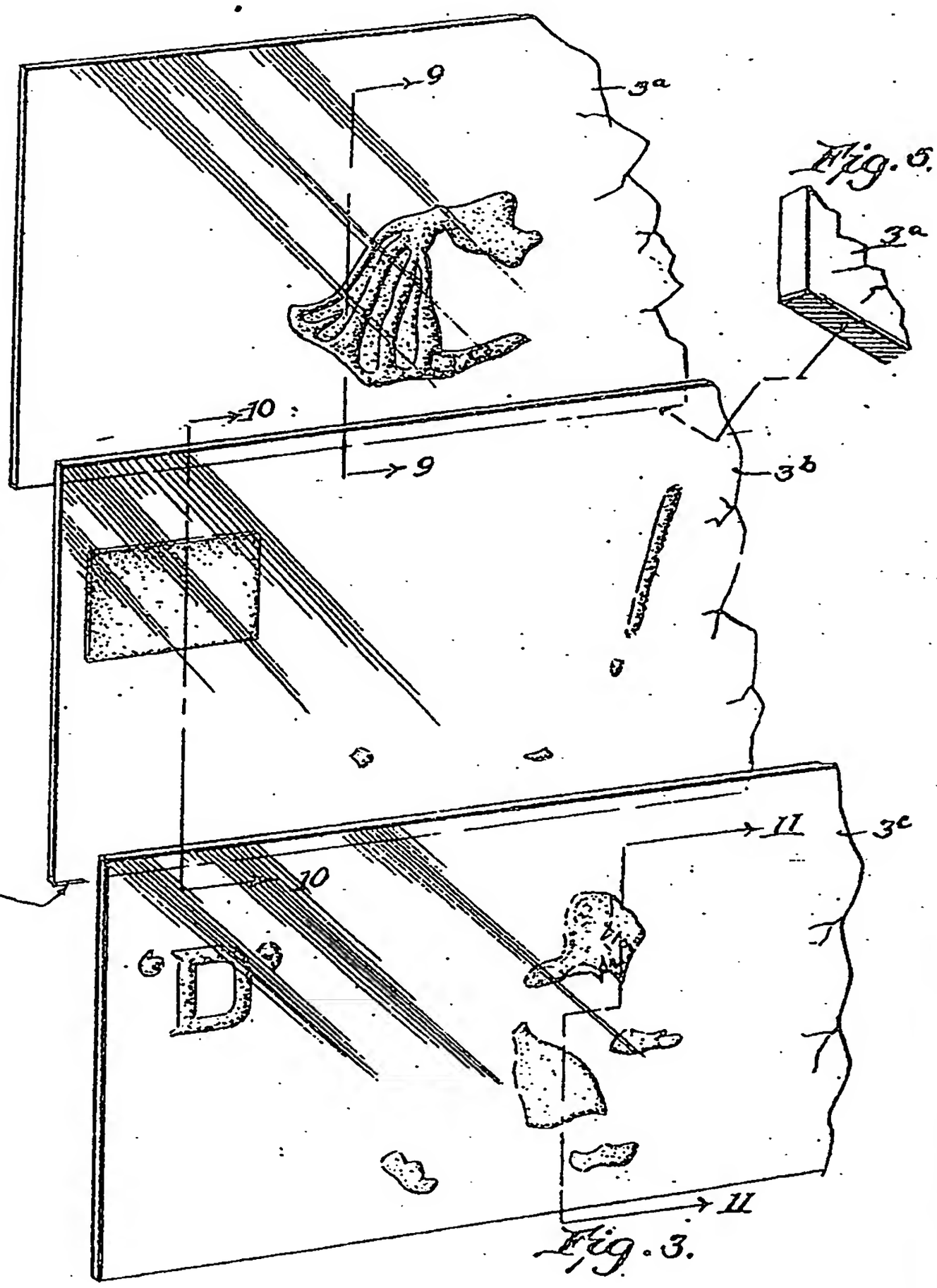

Fig. 5.

Fig. 3.

2.

Fig. 4.

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14.

2
1

2
3c

15
3

2
3

Fig. 15.

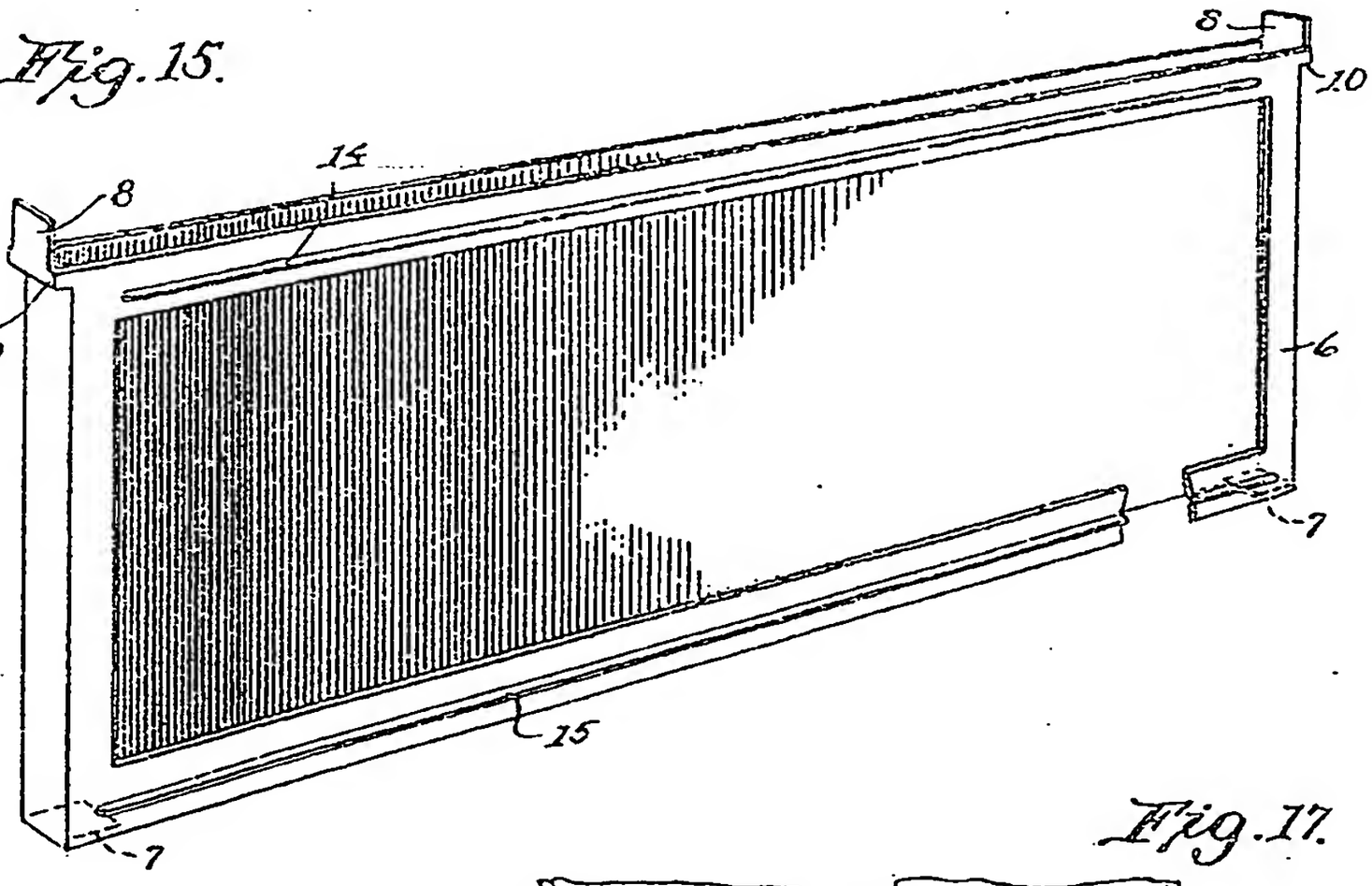
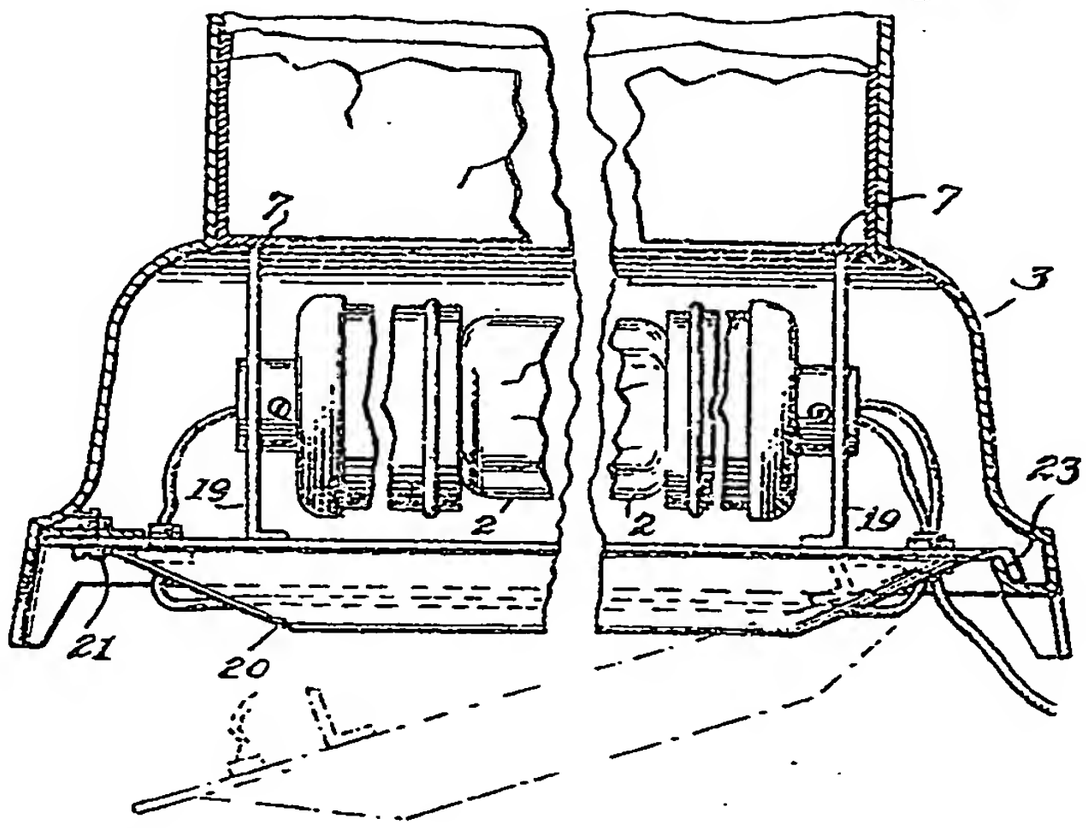


Fig. 17.



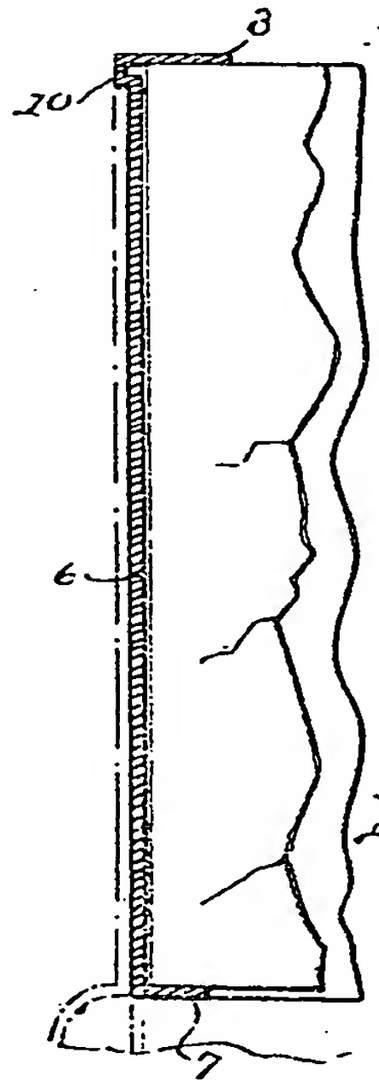


Fig. 16.

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Fig.8.

Fig.9.

Fig.10.

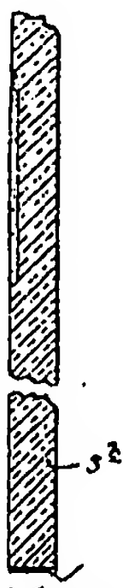

Fig.11.

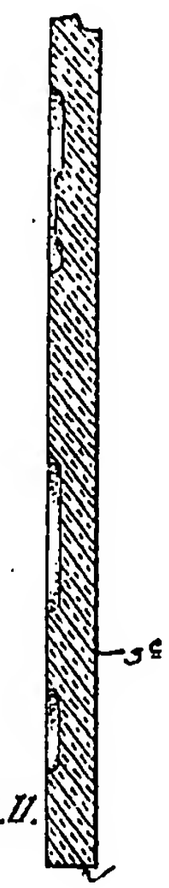

Fig.13.

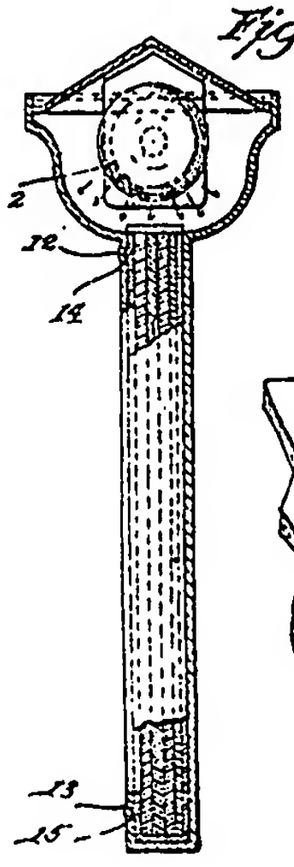

Fig.12.

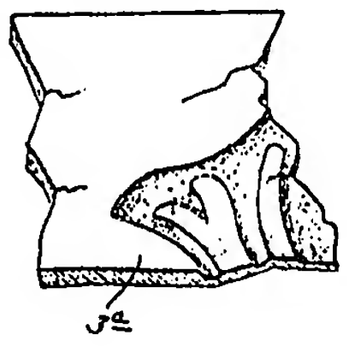

Fig.14.

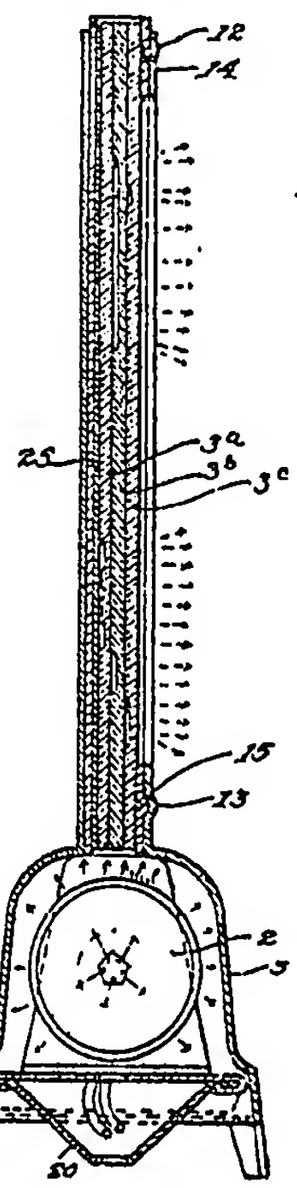

Fig.15.

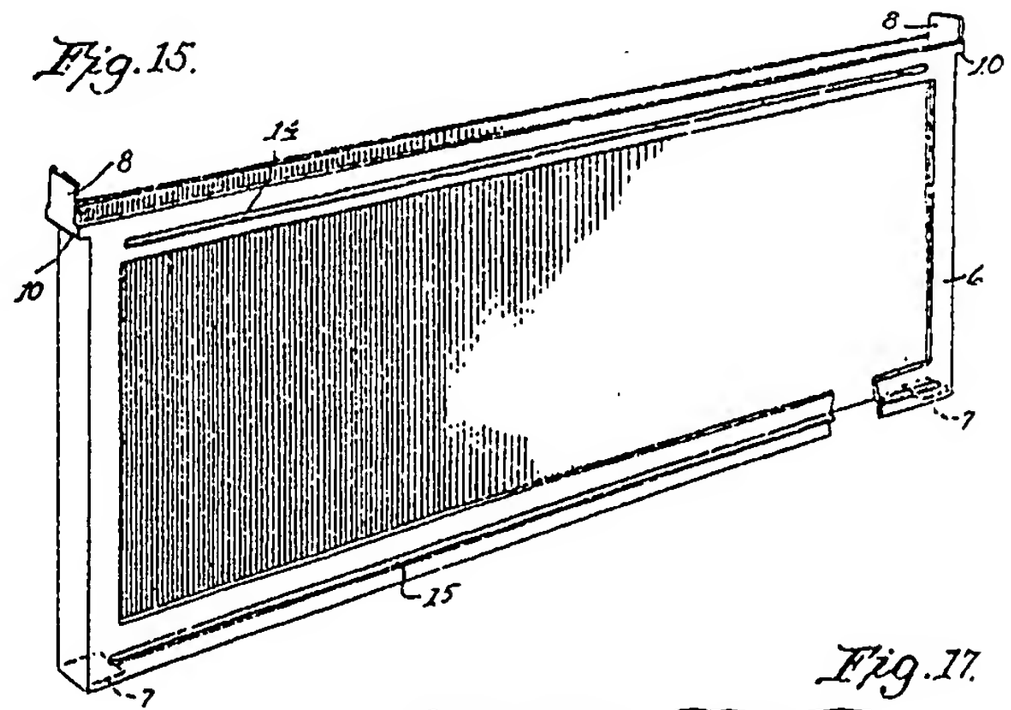

Fig.16.

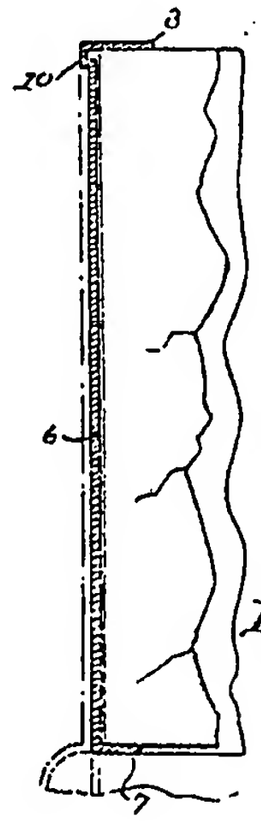

Fig.17.

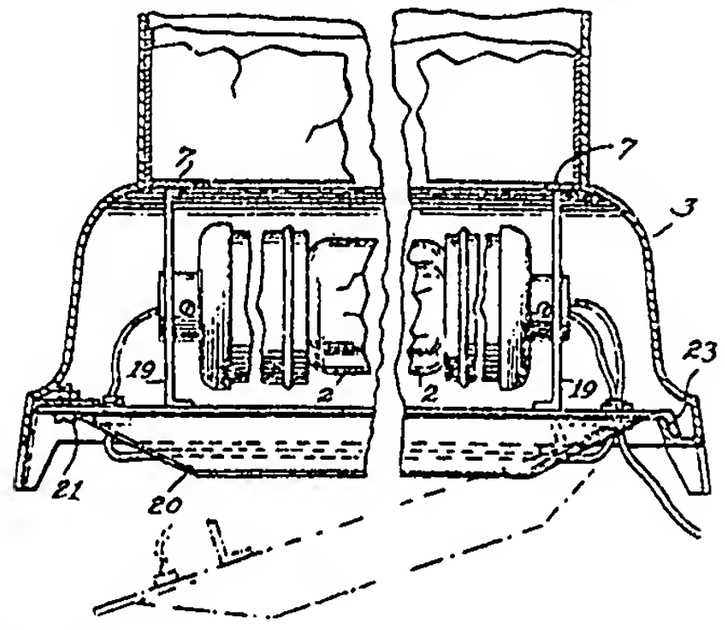

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Fig. 1.

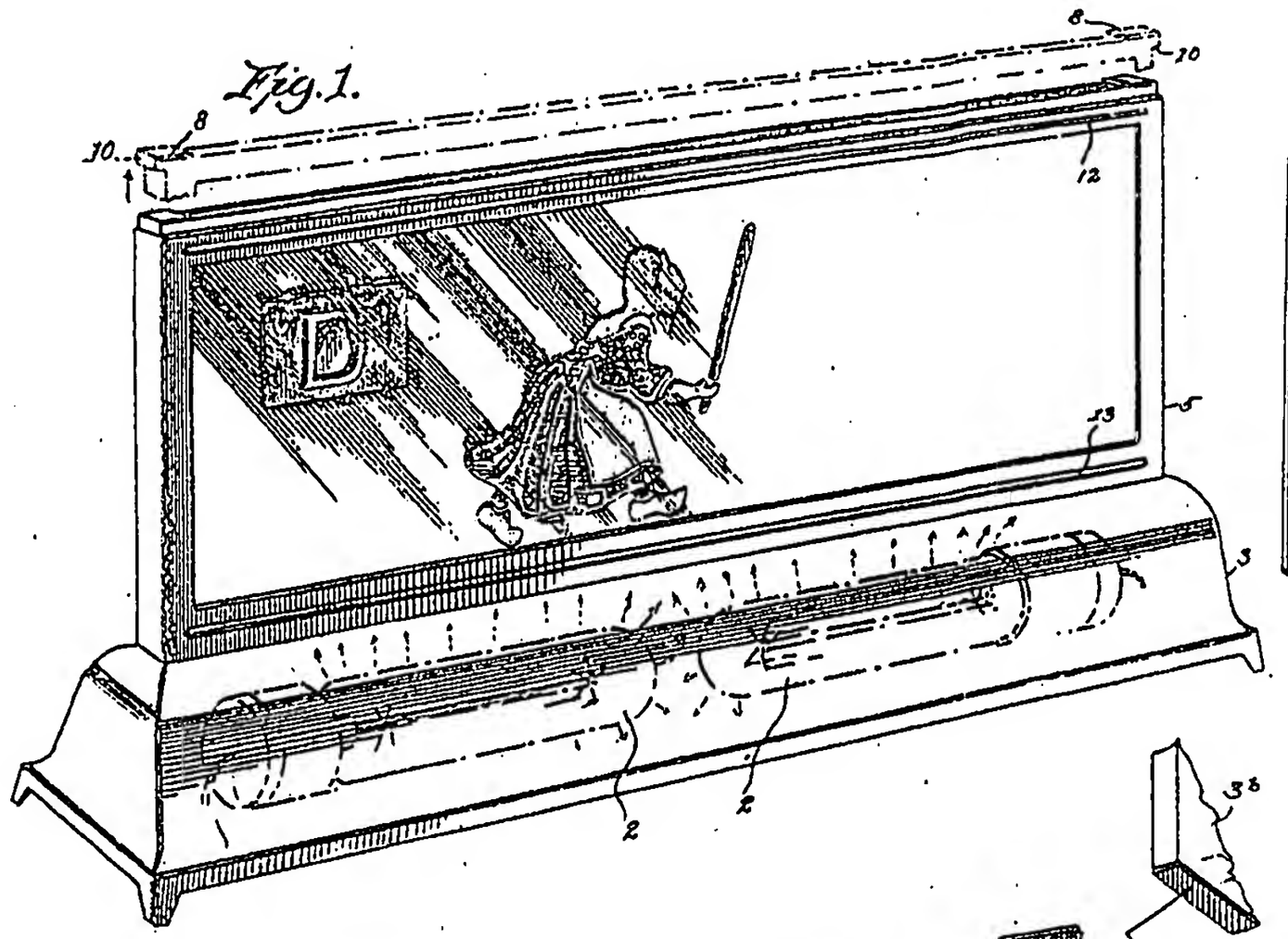
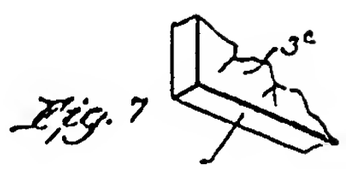


Fig. 2.

Fig. 7



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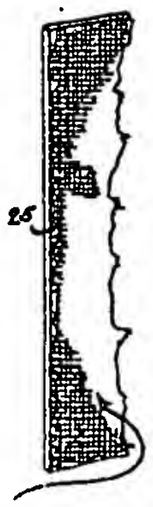

Fig. 6.

Fig. 5.

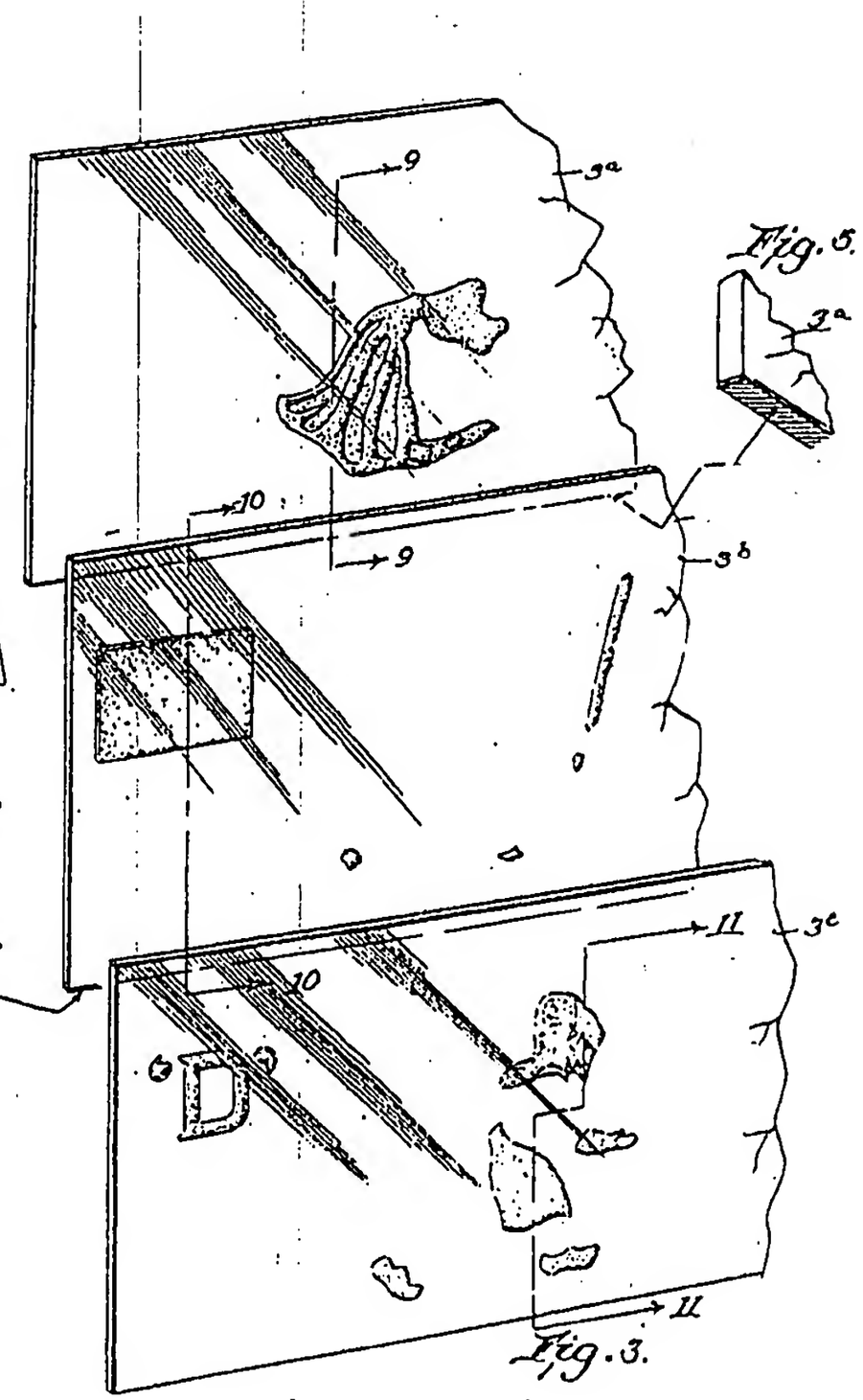

Fig. 3.

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341,968 COMPLETE SPECIFICATION

SHEET 2

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Fig. 8.

Fig. 9.

Fig. 10.

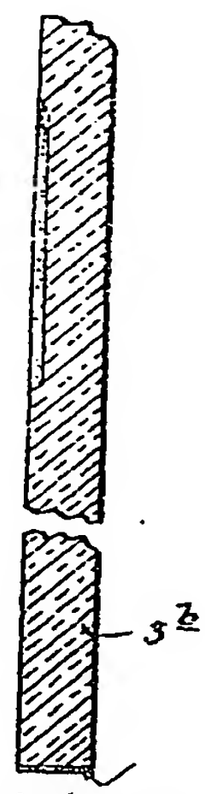


Fig. 11.

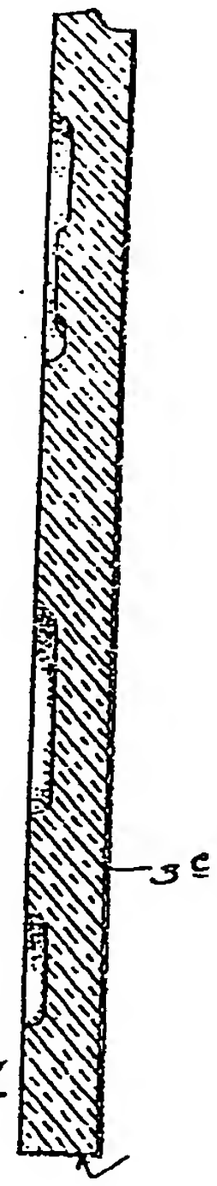


Fig. 13.

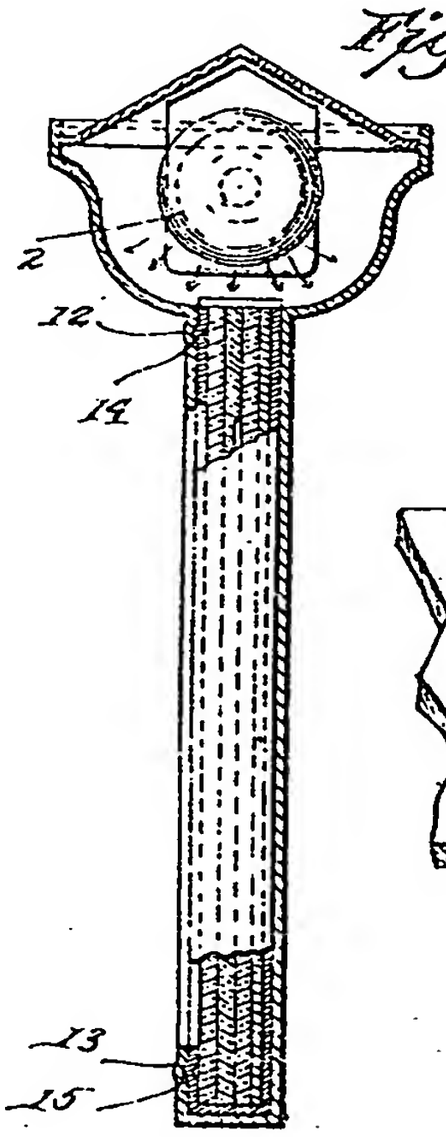


Fig. 12.

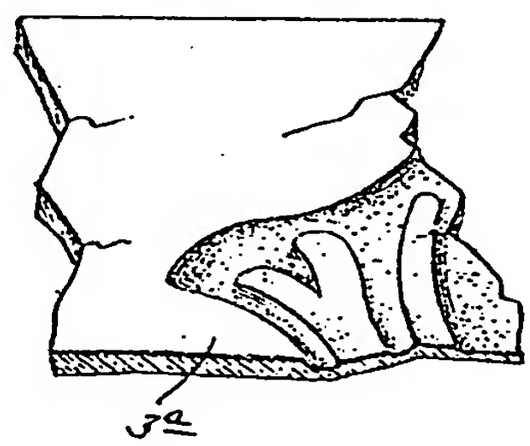
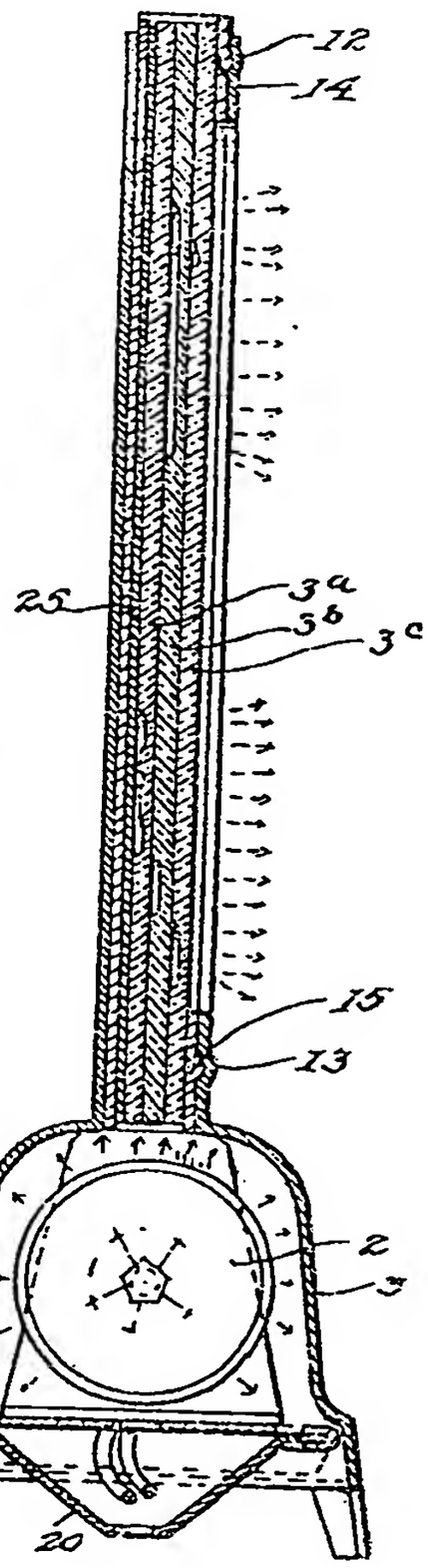
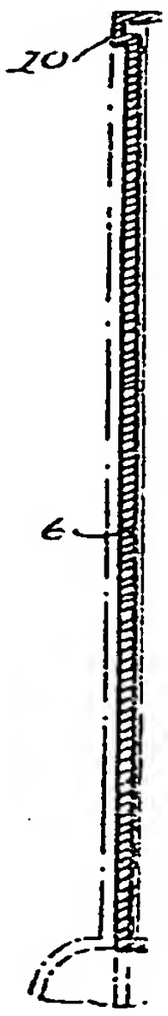


Fig. 14.





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